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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,232	12/13/2001	Michael Charles LaCroix	104427-100	1610

27542 7590 08/11/2004

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EXAMINER	
MILLER, PATRICK L	

ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/017,232	LACROIX, MICHAEL CHARLES	
	Examiner	Art Unit	
	Patrick Miller	2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 May 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *07132004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 05/17/04, with respect to claims 4 and 15 have been fully considered but they are not persuasive.

   - Archer et al (5,592,058) discloses a back-emf detection circuit, which detects the voltage across the motor (Fig. 1, #126). This circuit is the closed-loop feedback circuit, where the back-emf voltage is indicative of the voltage across the motor, and the back-emf detection circuit sends a signal to the state machine for monitoring (#127 to state machine, #112). Furthermore, with respect to claim 15, the Examiner has interpreted the inverter bridge (Fig. 4, #404) to be the digital to analog converter *means* (Fig. 4, #4 receives digital driving signals at each driver, #'s 416-421 and converts this to an analog signal to drive the motor). The output of the inverter *sets* the voltage across the motor.

2. Applicant's arguments, filed 05/17/04, with respect to the rejection(s)of claim(s) 1-3, 10-14, and 18 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Okawa et al (6,157,160).

   - The Examiner cannot find motivation to implement an *8-bit* digital to analog converter means to the Archer et al reference.

Double Patenting

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

3. Claims 1-18 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-18 of copending Application No. 10/847,276. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

   - Claims of both applications are substantially identical.

Claim Objections

4. Claims 15-17 are objected to because of the following informalities: See bullets below. Appropriate correction is required.

   - The preamble of claim 15 recites, "the voltage across the electric motor determining the speed of the electric motor." This wording is unclear. The Examiner suggests, "where the voltage across the electric motor determines the speed of the electric motor," or similar wording, if this is in fact what the Applicant intends. However, note that this wording is in the preamble is not given significant patentable weight.
   - Claim 18 (last two lines) recites, "a closed loop feedback loop." It is unclear whether this closed loop feedback is the same as that recited in line 3. Please clarify.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 10-12 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

   - Claim 1 recites setting a voltage for a motor, and a closed loop feedback for monitoring and setting the voltage across the motor. With respect to claims 10-12, it is unclear from the specification what components, other than an electric motor, this system could control. For instance, with respect to claim 12, it is unclear how one would only control an automotive light using this controller. Only controlling a light is not the same as claiming, for instance, the system further illuminates a light to indicate an overcurrent condition.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 10, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Okawa et al (6,157,160).

- With respect to claim 1, Okawa et al disclose an electric motor controller, comprising: a digital to analog converter means that converts an 8-bit digital signal to an analog voltage for setting voltage across a motor (Fig. 2, #9e; col. 7, lines 13-20); a digital state machine means that converts the duty cycle of an input signal, and outputs a digital signal to the digital to analog converter means (Fig. 2, #9 is interpreted to be a state machine *means*, and #9a specifically outputs an 8-bit digital signal to the D/A based on the duty cycle of signals S1 and S2; col. 7, lines 8-32); and a closed loop feedback loop means for monitoring and setting the voltage across the motor (Fig. 1, current sensors; col. 3, lines 32-39).
- With respect to claims 10 and 11, Okawa et al disclose using the aforementioned motor controller to control an automotive component, and the automotive component is an electric motor (col. 2, lines 51-59).

7. Claims 4-7, 9, and 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Archer et al (5,592,058).

- With respect to claims 4 and 15, Archer et al disclose a circuit arrangement in a variable speed electric motor controller comprising: a controller logic circuit that controls a state machine (fig. 4, #102 controls #112), the state machine sets the voltage supplied to the motor (fig. 4, #112 output to drivers), a closed loop feedback signal that generates a signal indicative of the voltage across the motor (fig. 4, #126A), and the feedback signal is input to the state machine (fig. 4, #127), and converting the duty cycle of an input signal from the closed loop feedback (fig. 4, #127 converted).
- With respect to claims 5 and 6, the state machine controls the motor when it is in operation (running state) and the state machine has an overcurrent state (col. 5, lines 7-21) and a timeout state (col. 11, lines 35-45).
- With respect to claim 7, the controller comprises a microprocessor and a memory to control the state machine (fig. 1, #102 and #106 control #112).
- With respect to claim 9, the circuit is directly connected to the motor (fig. 1, #124 and #126 to #114).
- With respect to claims 16 and 17, Archer et al disclose the control system used in an air conditioning system (temperature control system), which could be used in an automobile.

8. Claims 4, 5, 7-9, and 15-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Sugiyama et al (6,339,310).

- With respect to claim 4, Sugiyama et al disclose a circuit arrangement in a variable speed electric motor controller comprising: a controller logic circuit for operating a controller

logic finite state machine (Fig. 1, #'s 15, 16, 17 [equivalent of a state machine]), where the state machine sets the voltage supplied to an electric motor (Fig. 1, #17 sets the voltage for the gate driver, #18, which sets the voltage to the motor; cols. 6/7, lines 63-67/1-44); and a closed-loop feedback circuit for generating a signal indicating the voltage across the electric motor (Fig. 1, #2; col. 6, lines 63-67), the signal being input to the state machine for monitoring (Fig. 1, output of #2 to #16).

- With respect to claim 5, the state machine comprises at least a running state (Col. 7, 'Table' on lines 15-23; running state is '(1)').
- With respect to claim 7, Sugiyama et al disclose the controller logic circuit comprising a microprocessor (Fig. 1, #11) and a memory (Col. 8, lines 42-59, #15a), each configured to control the state machine (Col. 6, lines 48-62 and Col. 8, lines 42-59).
- With respect to claim 8, Sugiyama et al disclose a digital to analog converter for converting an 8-bit signal to analog voltage for setting the voltage supplied to the motor (Col. 8, lines 42-59; #15a to 8-bit D/A, #15g, which sets the voltage at the gate drivers).
- With respect to claim 9, the circuit arrangement is directly coupled with the electric motor (Fig. 1, #15-17 to motor via #18).
- With respect to claim 15, Sugiyama et al disclose a system for controlling the speed of an electric motor, the system comprising: a digital to analog converter means for converting a digital signal to analog value for setting a voltage across the electric motor (col. 8, lines 49-59; D/A is #15g, and the digital signal is sent from memory, #15a; cols. 6/7, lines 63-67/1-7; sets voltage S71 to motor driver); a microprocessor and associated digital memory for generating the digital signal (Fig. 1, #11 and #15a, memory, generates the

digital signal), the microprocessor configured to instantiate and operate a state machine for converting the duty cycle of an input signal generated by an associated closed-loop feedback means (Fig. 1, #11 controls #15, #16, and #17 [equivalent of a state machine] with the feedback of #2); and a closed-loop feedback means for monitoring the voltage across the motor and generating a signal for input to the microprocessor (Fig. 1, #2 is the feedback voltage; cols. 6/7, lines 63-67/1-44; col. 8, lines 42-59).

- With respect to claim 16, Sugiyama et al disclose the system used with an automobile (col. 1, lines 29-35).
- With respect to claim 17, the Sugiyama et al disclose the system comprising a temperature control system (col. 2, lines 16-47).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 2, 3, 13, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okawa et al as applied to claims 1 and 10 above, and further in view of Welch (5,486,747).

- Okawa et al do not disclose the controller comprising an over-current sense circuit (claims 2 and 13) and an over/under voltage sense circuit (claims 3 and 14).
- Welch disclose a three phase motor that has an over-current sense circuit (Fig. 1, #24.5, 24.5) and an over/under voltage sense circuit (col. 8, lines 14-15). The motivation to use an over-current sense circuit is to provide a delay for in-rush current and to indicate a

problem if the excessive current is detected after start-up. This provides the advantage of protecting the motor from damage due to excessive currents (col. 7, lines 36-51). The motivation to use an over/under voltage sense circuit is to detect when the supply voltage is either too high or too low. This provides the advantage of putting the state machine in a standby state until the voltage is within limits (col. 8, lines 10-21).

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the control circuit of Okawa et al with a current sense circuit and a over/under voltage sense circuit, thereby providing the advantages of protecting the motor from damage and putting the state machine in a standby state, respectively, as taught by Welch.

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okawa et al (6,157,160) in view of Welch (5,486,747).

- With respect to claim 1, Okawa et al disclose an electric motor controller, comprising: a digital to analog converter means that converts an 8-bit digital signal to an analog voltage for setting voltage across a motor (Fig. 2, #9e; col. 7, lines 13-20); a digital state machine means that converts the duty cycle of an input signal, and outputs a digital signal to the digital to analog converter means (Fig. 2, #9 is interpreted to be a state machine *means*, and #9a specifically outputs an 8-bit digital signal to the D/A based on the duty cycle of signals S1 and S2; col. 7, lines 8-32); and a closed loop feedback loop means for monitoring and setting the voltage across the motor (Fig. 1, current sensors; col. 3, lines 32-39).

- Okawa et al do not disclose the controller comprising an over-current sense circuit (claims 2 and 13) and an over/under voltage sense circuit (claims 3 and 14).
- Welch disclose a three phase motor that has an over-current sense circuit (Fig. 1, #24.5, 24.5) and an over/under voltage sense circuit (col. 8, lines 14-15). The motivation to use an over-current sense circuit is to provide a delay for in-rush current and to indicate a problem if the excessive current is detected after start-up. This provides the advantage of protecting the motor from damage due to excessive currents (col. 7, lines 36-51). The motivation to use an over/under voltage sense circuit is to detect when the supply voltage is either too high or too low. This provides the advantage of putting the state machine in a standby state until the voltage is within limits (col. 8, lines 10-21).
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the control circuit of Okawa et al with a current sense circuit and a over/under voltage sense circuit, thereby providing the advantages of protecting the motor from damage and putting the state machine in a standby state, respectively, as taught by Welch.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 571-272-2070. The examiner can normally be reached on M-F, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 41. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick Miller
Examiner
Art Unit 2837

pm
August 8, 2004

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